IN THE CLAIMS:

The following is a complete listing of the claims, and replaces all earlier version and listings.

1. (currently amended): An image processing apparatus comprising:

~~characteristic discrimination means for discriminating characteristics of an image;~~

holding means for holding saturation information in correspondence with a plurality of attributes;

segmentation means for segmenting an input image into a plurality of areas;

discriminating means for discriminating attributes of each area, and setting an attribute of the input image based on the attributes of those areas;

saturation calculation means for calculating saturation information of ~~the image~~ an area that has the set attribute;

parameter setting means for setting a parameter used to convert saturation of the input image in accordance with the ~~characteristics discriminated by said characteristic discrimination means~~ held saturation information in correspondence with the set attribute of the input image, and the calculated saturation information;

~~saturation conversion means for converting the saturation of the image on the basis of the parameter;~~ and

~~holding means for holding saturation information in correspondence with the plurality of attributes;~~

~~wherein said parameter setting means sets the parameter on the basis of the saturation information held in said holding means~~

conversion means for converting saturation of the input image, using the set parameter.

2. (canceled).

3. (currently amended): The apparatus according to claim [[2]] 1, wherein the set attribute is a color attribute of [[an]] the input image.

4. (currently amended): The apparatus according to claim [[2]] 1, wherein the set attribute is set in correspondence with an object in [[an]] the input image.

5. (currently amended): The apparatus according to claim 4, wherein the set attribute includes at least one of attributes "person", "flower", "sky", "grass", "ground", and "general background".

6. (canceled).

7. (currently amended): The apparatus according to claim [[6]] 4, wherein the area attributes are selected from a set of eligible candidates, one member of that set being a catchall ~~further includes an~~ attribute "other" ~~which does not belong to any other attributes~~.

8. (canceled).

9. (currently amended): The apparatus according to claim [[8]] 1, wherein said holding means holds optimal saturation values in units of attributes.

10. (canceled).

11. (currently amended): The apparatus according to claim [[2]] 1, wherein said ~~characteristic discrimination~~ segmentation means segments the input image into a plurality of blocks~~, and discriminates attributes in units of blocks~~.

12. (currently amended): The apparatus according to claim [[11]] 1, wherein said ~~parameter setting means sets the parameter on the basis of an attribute with high priority when attributes differ in units of blocks~~ discrimination means selects an attribute with high priority from the attributes of the plurality of the areas, and set the selected attribute as an attribute of the input image.

13. (previously presented): The apparatus according to claim 1, wherein said parameter setting means sets a plurality of parameters.

14. - 21. (canceled).

22. (currently amended): ~~An~~ The ~~image processing~~ apparatus according to claim 1, further comprising:

~~characteristic discrimination means for discriminating characteristics of an image;~~

~~saturation calculation means for calculating saturation information of the image;~~

~~parameter setting means for setting a parameter used to convert saturation of the image in accordance with the characteristics discriminated by said characteristic discrimination means;~~

~~saturation conversion means for converting the saturation of the image on the basis of the parameter;~~

~~detection means for detecting a color distribution of the image;~~

~~generation means for generating gradation correction information of the image on the basis of the color distribution; and~~

~~gradation correction means for performing gradation correction of the image on the basis of the gradation correction information~~

detection means for detecting highlight portion and shadow portion of the input image;

generation condition setting means for setting a gradation condition on the basis of the highlight portion and the shadow portion; and

gradation correction means for performing gradation correction of the input image on the basis of the gradation condition.

23. (currently amended): The apparatus according to claim 22, wherein said ~~saturation~~ conversion means performs saturation conversion, by using the set parameter, for an image which has undergone the gradation correction by said gradation correction means.

24. (currently amended): ~~The~~ An image processing apparatus, comprising: ~~according to claim 22~~

characteristic discrimination means for discriminating characteristics of an image;

saturation calculation means for calculating saturation information of the image;

parameter setting means for setting a parameter used to convert saturation of the image in accordance with the characteristics discriminated by said characteristic discrimination means;

saturation conversion means for converting the saturation of the image on the basis of the parameter;

detection means for detecting a color distribution of the image;

generation means for generating gradation correction information of the image on the basis of the color distribution; and

gradation correction means for performing gradation correction of the image on the basis of the gradation correction information,

wherein said generation means comprises:

highlight calculation means for calculating highlight area information of an image on the basis of the color distribution; and

white balance calculation means for calculating white balance information on the basis of the highlight area information and a predetermined highlight value, and

wherein said gradation correction means corrects gradation of the image on the basis of the white balance information and the highlight value.

25. (currently amended): ~~The~~ An image processing apparatus, comprising: ~~according to claim 22~~

characteristic discrimination means for discriminating characteristics of an image;

saturation calculation means for calculating saturation information of the image;

parameter setting means for setting a parameter used to convert saturation of the image in accordance with the characteristics discriminated by said characteristic discrimination means;

saturation conversion means for converting the saturation of the image on the basis of the parameter;

detection means for detecting a color distribution of the image;

generation means for generating gradation correction information of the image on the basis of the color distribution; and

gradation correction means for performing gradation correction of the image on the basis of the gradation correction information,

wherein said generation means comprises:

shadow calculation means for calculating shadow area information of an image; and

black balance calculation means for calculating black balance information on the basis of the shadow area information and a predetermined shadow value, and

wherein said gradation correction means corrects gradation of the image on the basis of the black balance information and the shadow value.

26. (currently amended): An image processing method comprising the steps of:

~~the characteristic discrimination step of discriminating characteristics of an image;~~

holding saturation information in correspondence with a plurality of attributes;

segmenting an input image into a plurality of areas;

discriminating attributes of each area, and setting an attribute of the input image on the basis of the attributes of those areas;

~~the saturation calculation step of~~ calculating saturation information ~~of the image~~ an area that has the set attribute;

~~the parameter setting step of~~ setting a parameter used to convert saturation of the input image in accordance with ~~the characteristics discriminated in the characteristic discrimination step~~ held saturation information in correspondence with the set attribute of the input image, and the calculated saturation information; and

~~the saturation conversion step of converting the saturation of the image on the basis of the parameter; and~~

~~a holding step for holding saturation information in correspondence with the plurality of attributes,~~

~~wherein said parameter setting step includes setting the parameter on the basis of the saturation information held in said holding step~~

converting saturation of the input image, using the set parameter.

27. (canceled).

28. (currently amended): The method according to claim [[27]] 26, wherein the set attribute is a color attribute of [[an]] the input image.

29. (canceled).

30. (currently amended): The method according to claim [[27]] 26, wherein ~~the characteristic discrimination~~ said segmenting step includes the step of segmenting the input image into a plurality of blocks~~, and discriminating attributes in units of blocks~~.

31. - 38. (canceled).

39. (new): A recording medium comprising program codes of an image processing method at least comprising:

code for a holding step, of holding saturation information in correspondence with a plurality of attributes;

code for a segmenting step, of segmenting an input image into a plurality of areas;

code for a discriminating step, of discriminating attributes of each area, and setting an attribute of the input image based on the attributes of those areas;

code for a saturation calculation step, of calculating saturation information of an area that has the set attribute;

code for a parameter setting step, of setting a parameter used to convert saturation of the input image in accordance with the held saturation information in

correspondence with the set attribute of the input image, and the calculated saturation information; and

code for a conversion step, of converting saturation of the input image, using the set parameter.

40. (new): An image processing apparatus comprising:

a holding unit adapted to hold saturation information in correspondence with a plurality of attributes;

a segmentation unit, adapted to segment an input image into a plurality of areas;

a discriminating unit, adapted to discriminate attributes of each area, and to set an attribute of the input image based on the attributes of those areas;

a saturation calculation unit, adapted to calculate saturation information of an area that has the set attribute;

a parameter setting unit, adapted to set a parameter used to convert saturation of the input image in accordance with the held saturation information in correspondence with the set attribute of the input image, and the calculated saturation information; and

a conversion unit, adapted to convert saturation of the input image, using the set parameter.